

Notice of Allowability

Application No.

10/036,660

Examiner

Daniel S. Metzmaier

Applicant(s)

AUBERT, JAMES H.

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 22 Jan. 2004 & 10 Feb. 2004.
2. ☒ The allowed claim(s) is/are 1-6.
3. ☒ The drawings filed on 22 January 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 04232004.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows:

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Replace the paragraph at page 3, lines 17 to 22 as follows:

Diels-Alder reactions have been shown to produce materials that are thermally removable. For example, ~~Saunders~~ Loy et al. (U.S. Patent Application No. 09/484,839, now U.S. Patent 6,337,384 B1; incorporated herein by reference) describe epoxide compositions formed by Diels-Alder reactions utilizing bismaleimides and furans to form thermally removable epoxides, but the materials do not possess good removable adhesive properties.

Replace the existing claims with the claims as follows:

1. **(ORIGINAL)** A method of making a thermally-removable adhesive, comprising the steps of:
 - mixing a bismaleimide compound and a monomeric furan compound, said monomeric furan compound containing an oxirane group, at an elevated temperature of greater than approximately 90°C to form a homogeneous solution;
 - mixing a curative at said elevated temperature to form a second homogeneous mixture; and
 - cooling said second homogeneous mixture to a temperature less than approximately 70°C to simultaneously initiate a Diels-Alder reaction between said furan and said bismaleimide and a epoxy curing reaction between said curative and said oxirane group, thereby forming a thermally-removable adhesive.
2. **(ORIGINAL)** The method of claim 1 wherein the curative is selected from the group consisting of amine curatives, anhydrides, carboxylic acids, and alcohols.
3. **(ORIGINAL)** The method of claim 1 wherein the curative is selected from the group consisting of chlorendic, dodecenylsuccinic anhydride, nadic methyl anhydride, pyromellitic dianhydride, maleic anhydride, 3-3'-dimethylmethylenedi(cyclohexylamine), polyoxypropylenediamine, and nonylphenol.
4. **(ORIGINAL)** The method of claim 1 wherein the monomeric furan is furfuryl glycidyl ether.

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5. (ORIGINAL) The method of claim 1 wherein the bismaleimide compound is selected from 1,1'-(methylenedi-4,1-phenylene)-bismaleimide, N,N'-(4-methy6-1,3-phenyl)-bismaleimide, N,N'-m-bismaleimide-bismaleimide, and $((C_4H_2O_2N)C_6H_4)_2(Obi(CH_3)_2)_4O$.

6. (ORIGINAL) The method of claim 1 wherein the second homogeneous mixture is formed within less than approximately 20 minutes.

7-19 (Canceled).

Reasons for allowance

2. The following is an examiner's statement of reasons for allowance: the drawings have been accepted as replacement figure 4 and figure 5. The specification is deemed to be sufficiently descriptive and the drawings are not deemed to be new matter.

The related application 09/484,839, now US 6.337,384, is deemed independent and distinct from the instant methods since the related application does not claim the step of "mixing at an elevated temperature of greater than 90o C to form a homogeneous solution" and the subsequent step of "simultaneously initiating a Diels-Alder reaction between said furan and said bismaleimide and an epoxy curing reaction between said curative and said oxirane group".

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (703) 308-0451. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Daniel S. Metzmaier
Primary Examiner
Art Unit 1712

DSM